

# MIZORAM PUBLIC SERVICE COMMISSION

## GENERAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF JR. GRADE OF MIZORAM FOREST SERVICE (ASST. CONSERVATOR OF FORESTS) UNDER ENVIRONMENT, FOREST & CLIMATE CHANGE DEPARTMENT, GOVERNMENT OF MIZORAM, 2023

### AGRICULTURAL ENGINEERING

Time Allowed : 3 hours

Full Marks : 100

*The figures in the margin indicate full marks for the questions.  
Answer any 10 (ten) questions taking 5 (five) questions from each section.*

#### SECTION - A

1. What are the advantages and disadvantages of sprinkler irrigation? Discuss different components of a sprinkler irrigation system. (10)
2. (a) What are the different types of dairy barns? Explain in brief. (5)  
(b) Discuss the constructional details of a deep litter poultry shed. (5)
3. (a) What are the factors to be considered for setting up of a poultry unit? (5)  
(b) Explain about trench type silo pit. (5)
4. For a particular soil, moisture at field capacity is 27% and irrigation is to be applied at moisture content of 19%. The apparent specific gravity is 1.3 and depth of soil to be wetted is 1m. Determine hectare cm of water per hectare of land and time required to irrigate 6 hectare of land with 0.1 m<sup>3</sup>/s stream, if the efficiency of irrigation applied is 65%. (10)
5. What is the concept of watershed? Discuss in detail the selection of priority areas and work plan for watershed development. (10)
6. What are the applications of remote sensing in agriculture? Describe the merits and demerits of conventional and remote sensing approaches. (10)
7. Discuss the advantages of cold storage in food processing. What is cold food chain and how it works? (10)

**SECTION - B**

8. Explain with the help of neat sketches, the principle of working of a 4-stroke cycle engine.  
What functions does the flywheel perform in an engine? (10)
9. (a) What are the common seed metering devices? (5)  
(b) Describe the working procedure of a non-mixing continuous flow dryer. (5)
10. What do you mean by gasification of biomass? Describe the working principle of a down draft gasifier with neat diagram. (10)
11. What are the factors influencing the design of an air screen grain cleaner? Describe the working procedure of a vibratory air screen grain cleaner. (10)
12. What is 'Torque'? How is it measured? A piston pump with a diameter of 0.2m and stroke of 0.1m is pumping water over a head of 1.2m. Determine the torque of the pump. Calculate the volumetric efficiency if the pump delivers 90 lit/min at 60 rpm. (10)
13. What is the difference between analog and digital technology? Explain the terms RAM, ROM and CPU in relation to computer. (10)
14. Write short notes on any five of the following. (5×2=10)
- |                              |                               |
|------------------------------|-------------------------------|
| (a) TDC and BDC of IC engine | (b) PTO                       |
| (c) Photovoltaic cell        | (d) Calibration of seed drill |
| (e) Solar cabinet dryer      | (f) Bio gas                   |
| (g) Audio visual aids        | (h) Bucket elevator           |

\* \* \* \* \*